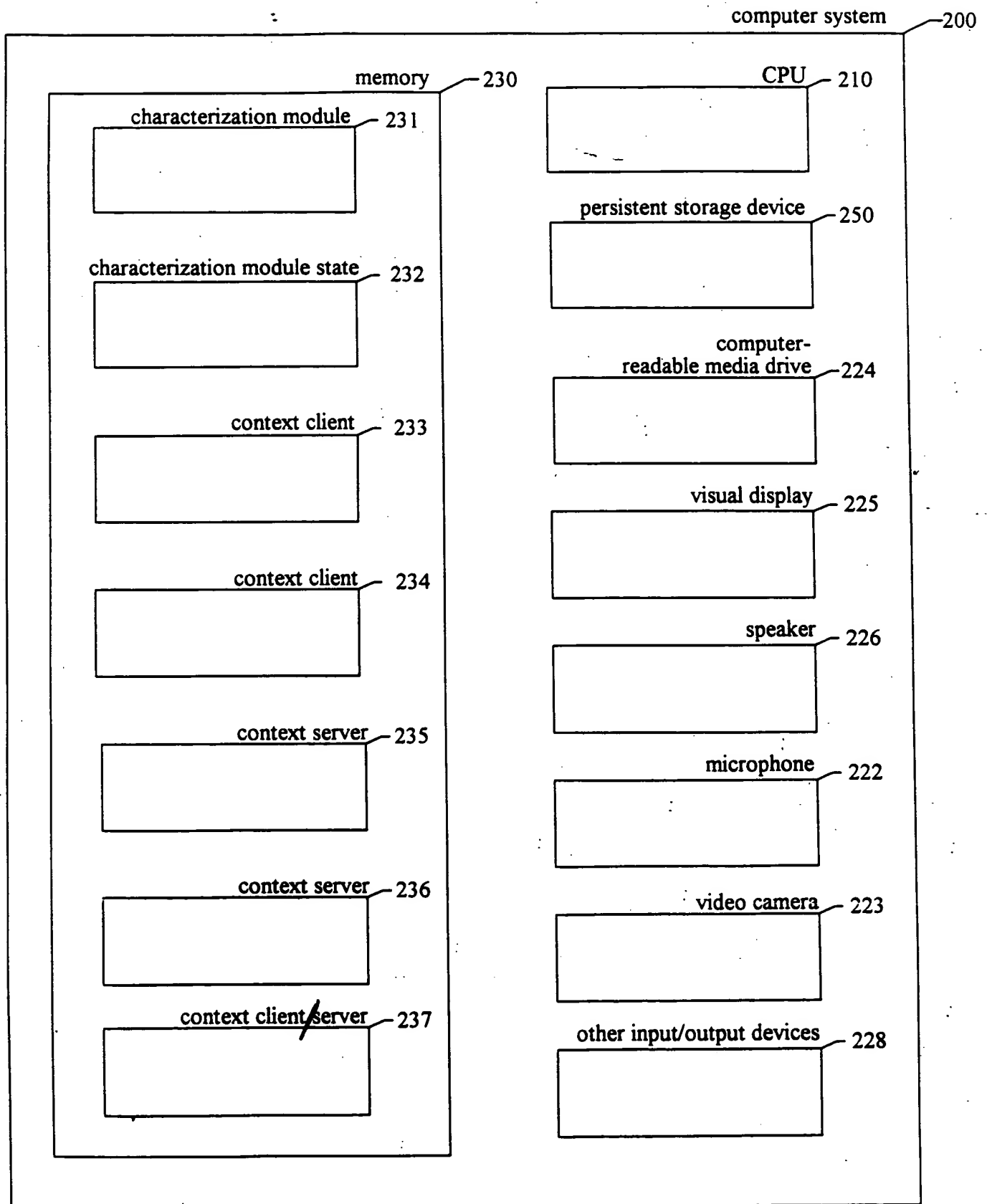


28

00321" 224260



**Fig. 2**



CONTEXT 2.2.42.50

context server table

context server name	version	installation date	filename	request handler
gps	1	2/10/2000	gps.exe	(reference)
ips	1	2/21/2000	ips.exe	(reference)
location region analysis	1	2/10/2000	l r a.exe	(reference)

FIG 4

attribute instance table

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° 09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° 021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22	.5	13:11:01.118 2/22/2000	meters	1
user.in_region	location_region_analysis	none	none	none	none	0

FIG 5

OBJECT = 2242250

context client table

context client name	message handler
location_map	(reference)
distance from home	(reference)
region analysis	(reference)

FIG 6

attribute instance table

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° 09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° 021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22	.5	13:11:01.118 2/22/2000	meters	1
user.in_region	location_region_analysis	none	none	none	none	1

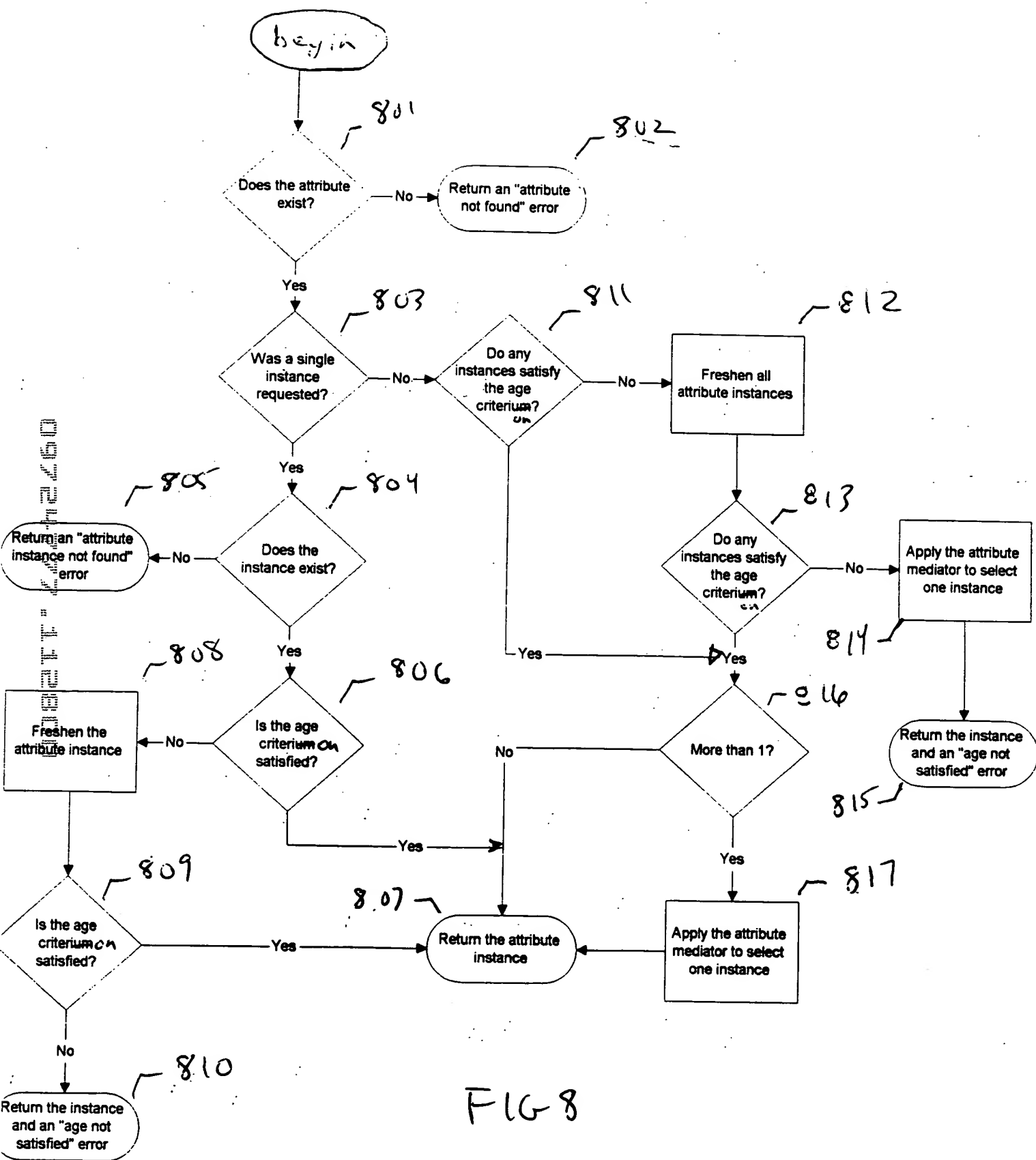


FIG 8

CONTEXT " 2242250

attribute instance table

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° .09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° .021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22.25	.5	13:11:06.565 2/22/2000	meters	1
user.in_region	region analysis	none	none	none	none	1

- 917

- 916

- 915

- 914

- 913

- 912

- 911

FIG 9

condition table

condition name	context client name	first logical parameter	second logical parameter	comparison value	logical operator
in region true	region analysis	user.in_region	none	TRUE	=

- 1014

- 1013

- 1012

- 1011

- 1010

- 1009

FIG 10

OBJECT "2424250"

condition monitor table

condition monitor name	context client name	condition name	behavior	frequency	condition last evaluated	trigger handler reference	stopped
region_boundaries_crossed	region_analysiss	in_region_true	TRUE or FALSE	30	13:11:29.101 2/22/2000	(reference)	no

FIG 11

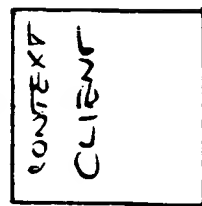
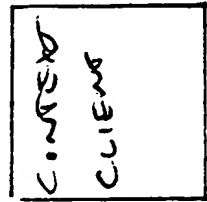
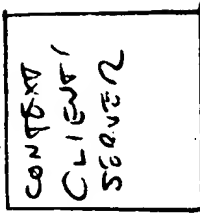
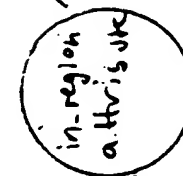
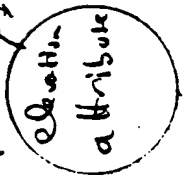
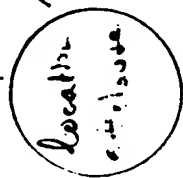
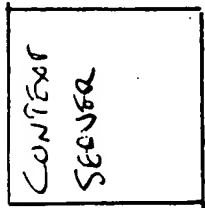
condition monitor table

condition monitor name	context client name	condition name	behavior	frequency	condition last evaluated	trigger handler reference	stopped
region_boundaries_crossed	region_analysiss	in_region_true	TRUE or FALSE	30	13:11:59.101 2/22/2000	(reference)	yes

FIG 12



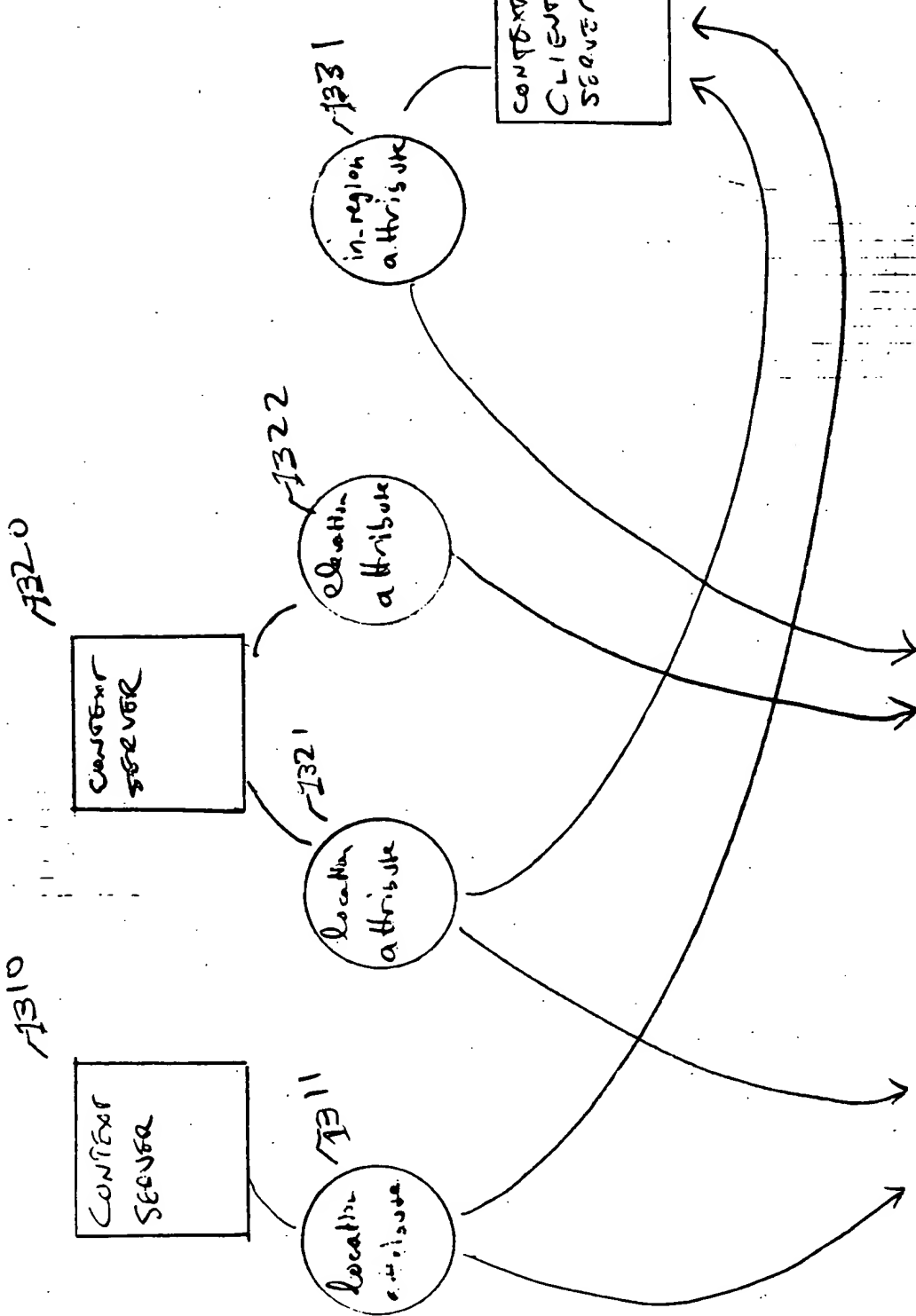
1310 1320



1340

1350

FIG 13



1401 ~  
1402 ~  
1403 ~  
1404 ~

attribute name	context client name
user.location	distance_from_home
user.in_region	location_map
user.location [gps]	location_region_analysis
user.elevation	location_map

L 1411

2 1412

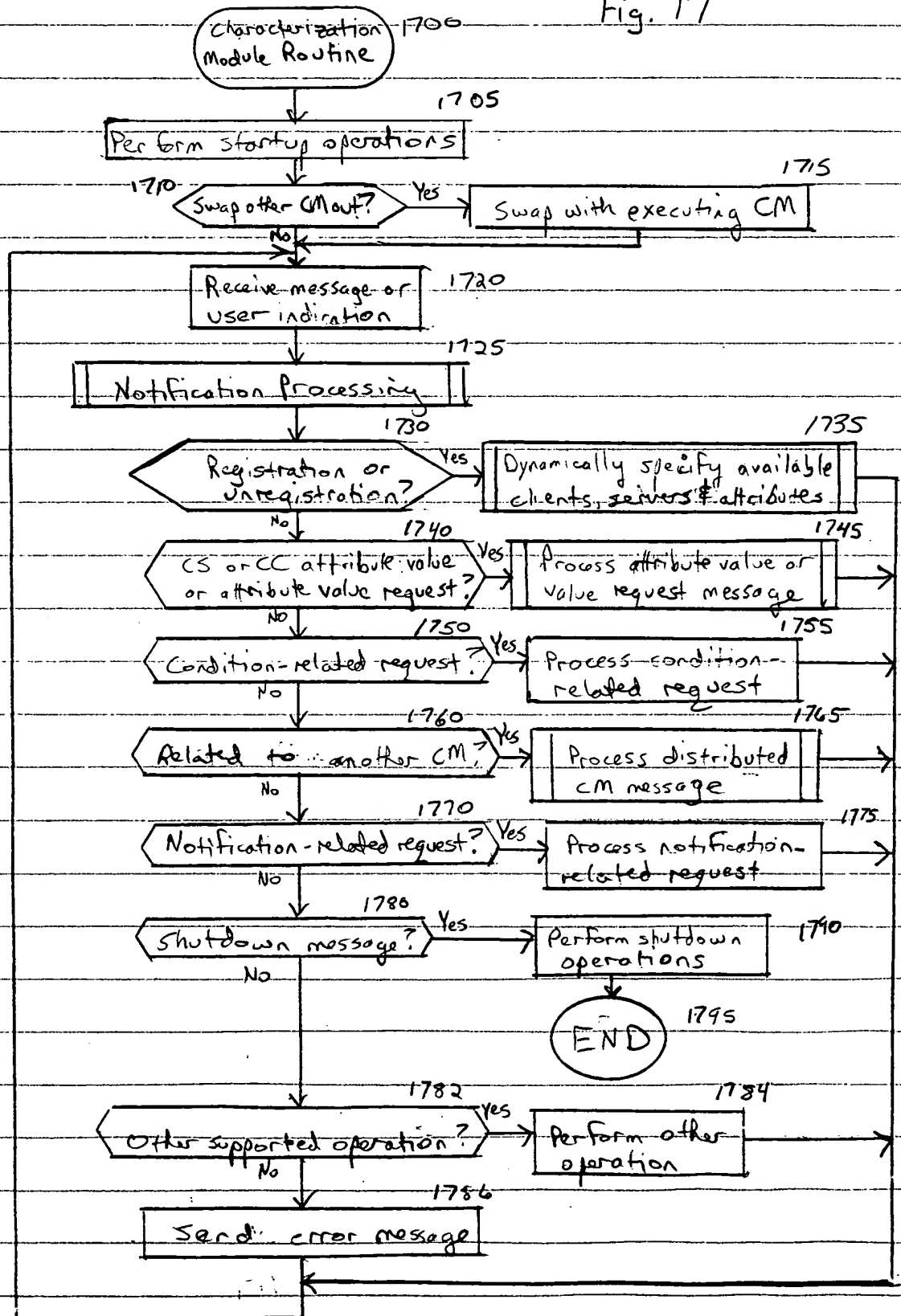
0927271600



- 1) User Setting
  - a) Mental Context
    - i) Meaning
    - ii) Cognition
      - (1) Divided User Attention
      - (2) Task Switching
      - (3) Background Awareness
    - iii) Solitude
    - iv) Privacy
      - (1) Desired Privacy
      - (2) Perceived Privacy
    - v) Social Context
    - vi) Affect
  - b) Physical Situation
    - i) Body
      - (1) Biometrics
      - (2) Posture
      - (3) Motion
      - (4) Physical Encumbrment
        - (a) Senses
          - (i) Eyes
          - (ii) Ears
          - (iii) Tactile
          - (iv) Hands
          - (v) Nose
          - (vi) Tongue
        - (b) Workload demands/effects
        - (c) Interaction with computer devices
        - (d) Interaction with people
        - (e) Physical Health
    - ii) Environment
      - (1) Time/Space
      - (2) Objects
      - (3) Persons
        - (a) Audience/Privacy Availability
          - (i) Scope of Disclosure
          - (ii) Hardware affinity for privacy
          - (iii) Privacy Indicator for User
          - (iv) Privacy Indicator for Public
          - (v) Watching Indicator
          - (vi) Being Observed Indicator
      - (4) Ambient Interference
        - (a) Visual
        - (b) Audio
        - (c) Tactile
- 2) Computer
  - a) Power
  - b) Configuration
    - i) User Input Systems
      - (1) Hand/Haptic
        - (a) Keyboard/Keystrokes
      - (2) Voice/Audio
      - (3) Eye Tracking
      - (4) Cursors
        - (a) Axis
        - (b) Resolution
          - (i) Selection
          - (ii) Invocation
        - (c) Accelerators
    - ii) Output Systems
      - (1) Visual
        - (a) Resolution
      - (2) Audio
        - (a) Public/Private
      - (3) Haptic
    - iii) External Resources
      - (1) I/O devices
      - (2) Connectivity
  - c) Data
    - i) Quantity/State
    - ii) Urgency/Importance
      - (1) Use of Prominence
    - iii) Modality
    - iv) Sensitivity/Purpose
      - (1) Privacy Issues
      - (2) Use of Association
      - (3) Use of Safety
    - v) Source/Ownership
      - (1) Types
        - (a) User generated
        - (b) Other computers or people
        - (c) Sensor
        - (d) PC State
      - (2) Use of Association

Fig. 16

Fig. 17



Notification Processing Subroutine 1725

Fig. 18

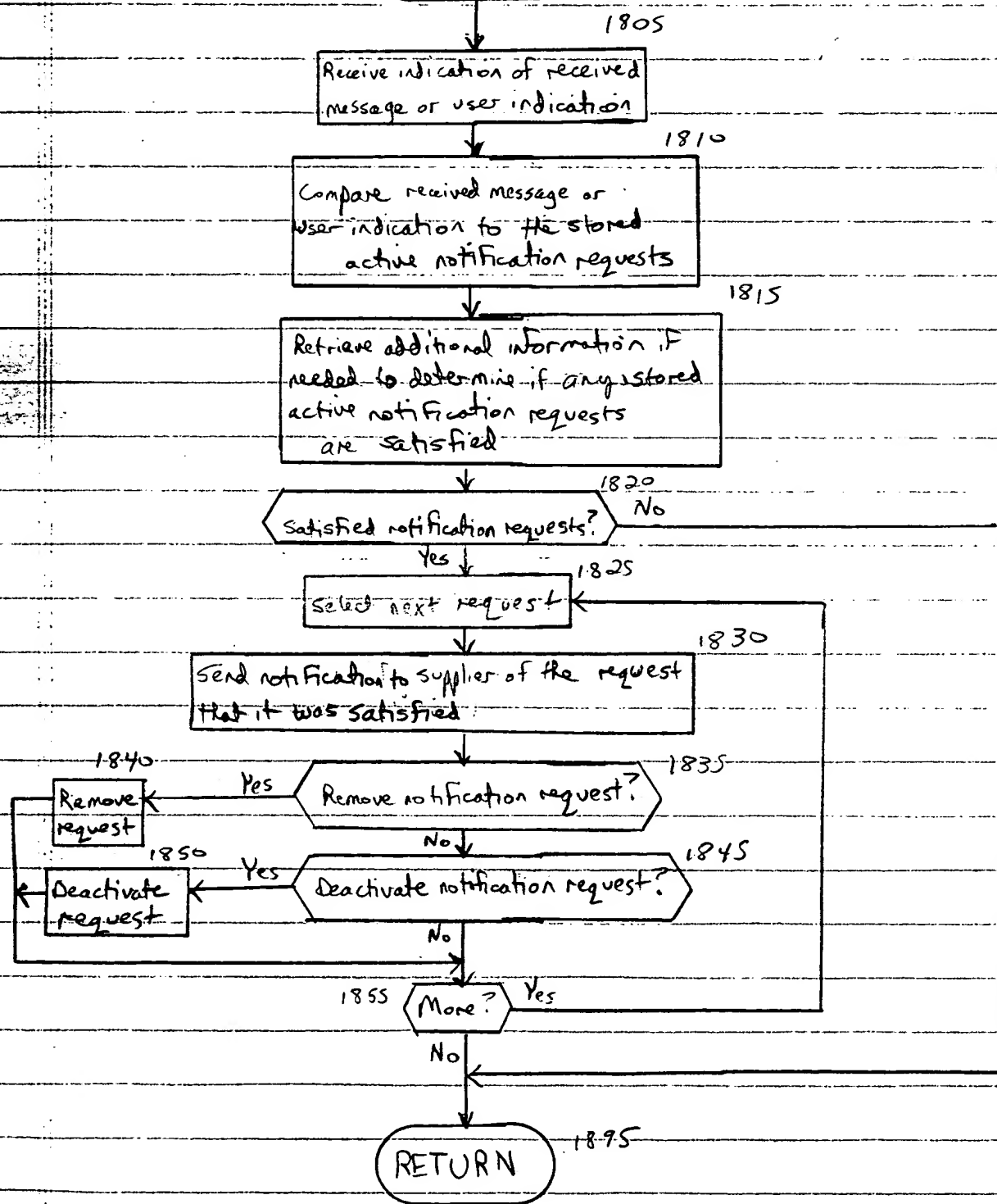


Fig. 19

Dynamically Specify Available  
clients, servers, & Attributes  
subroutine

1735

Receive a registration or  
unregistration message

1905

1910 Need security approval?

Yes

Determine if security  
is satisfied

1915

satisfied?

No

Send  
error  
message

1925

client

Related to  
attributes

server

1940 Register?

No

1942 Register new  
client if  
possible

Error?

Yes

Send error  
message

1942

1944

1946 Attributes  
included to  
register?

No

1950 Unregister  
client

1948 Unregister?

No

1952 Any currently  
registered attributes  
for the client?

No

1980 Register?

No

1982 Select next  
attribute

Attribute exists?

Yes

Register new  
attribute  
instance

1988 Register new  
attribute

1990 More?

Yes

1992 Unregister?

No

Unregister each  
attribute

1994

1960 Register?

No

1962 Register new  
server if  
possible

Attributes  
included  
to register?

Yes

1964 Send error  
message

1968 Unregister?

No

Unregister  
Server

1970 Any currently  
registered attributes  
for the server?

Yes

1972

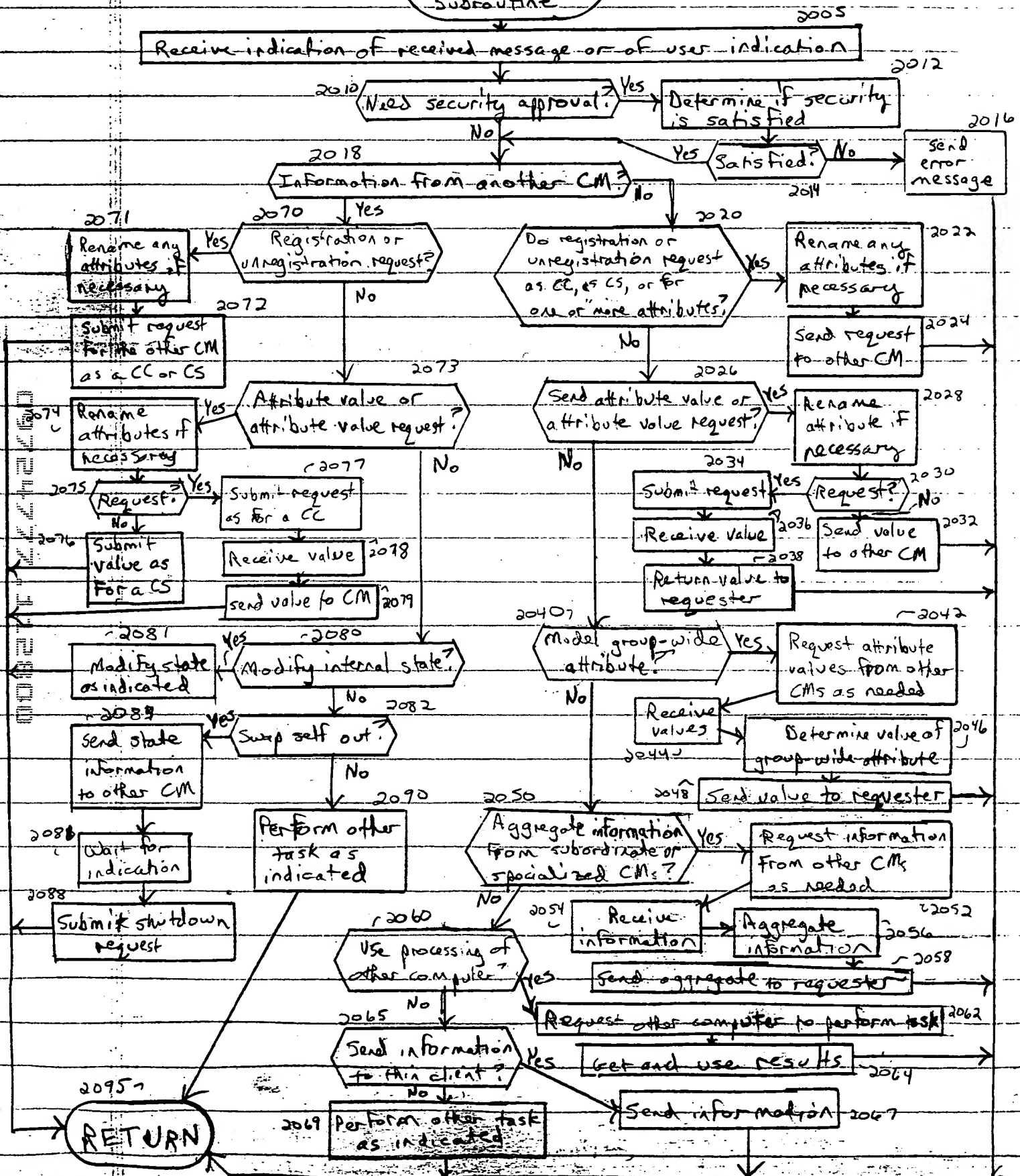
RETURN

1995

# Process Distributed CM Message Subroutine

1765

Fig. 20





Process Attribute Value  
On Value Request Message  
Subroutine

1745

Fig. 21

2105

Receive indication of received  
attribute value or value request

Request Value or request? Value

2150 Identify all attribute  
instances matching  
the request

2154

Send  
error  
message

Any instances?

No

Yes

Select next instance

Need new value?

No

2160 Pull attribute value  
from server

2162 Receive value?

No

2164 Process received  
attribute value

2166 More?

Yes

2168 Multiple values  
available?

No

2170

Mediate available  
values

2172 Send mediated value and  
additional information  
to requester

2174 Single value  
available?

No

2176

Send value and  
additional  
information  
to requester

Send error  
message

RETURN

2195

2120 Process received  
attribute value

2122 Identify all attribute  
value requests that  
match the value

Any requests?

No

2132 Mediate  
available  
values

2134 Select mediated value

2136 Select received value

2138 Select next request

2140 Push selected attribute  
value to client

2142 More?

Yes

No

2130 Multiple attribute  
instance values?

Yes

2132 Mediate  
available  
values

2134 Select mediated value

2136 Select received value

2138 Select next request

2140 Push selected attribute  
value to client

2142 More?

Yes

No

Process Received  
Attribute Value  
subroutine

2200 Fig 22

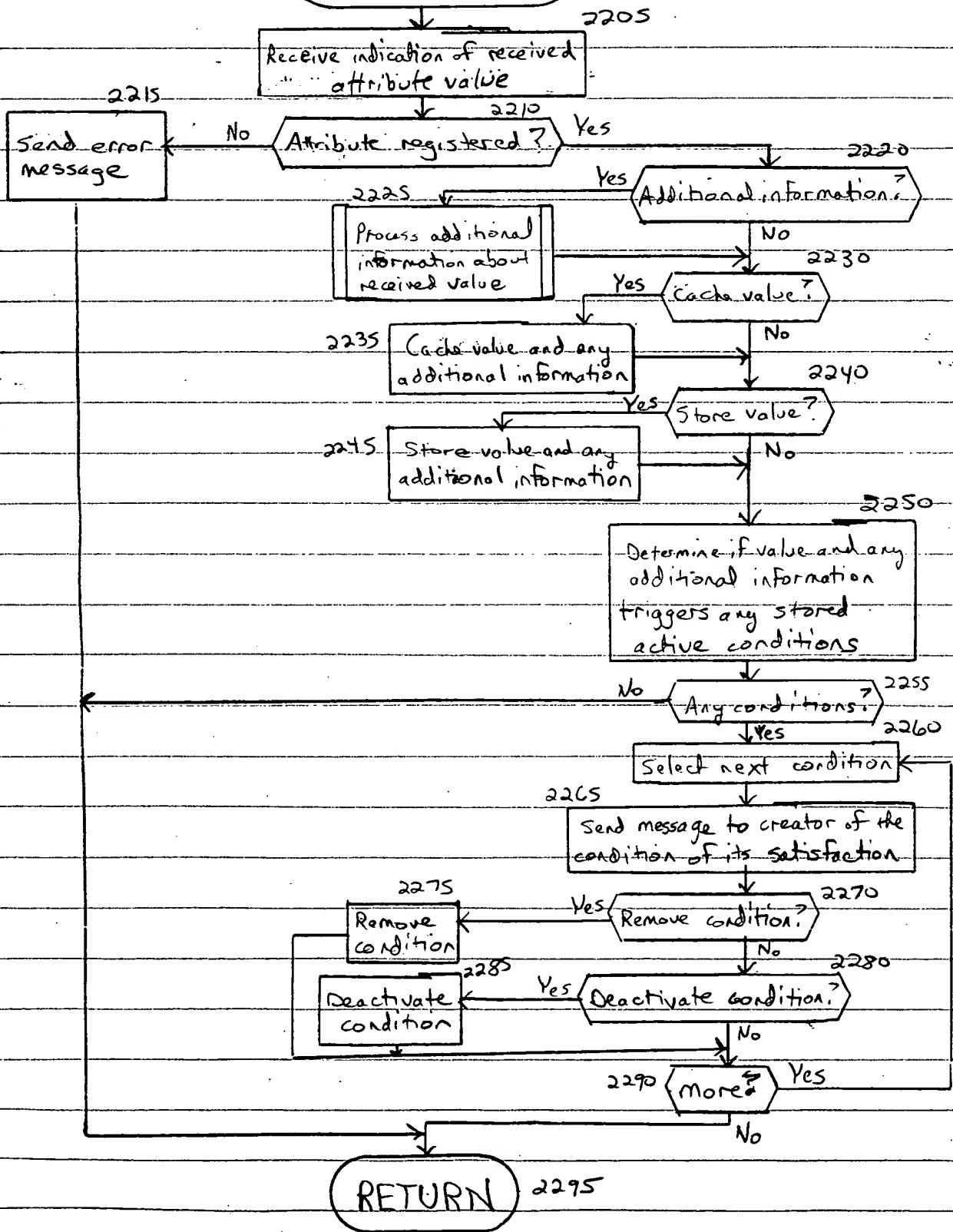


Fig. 23

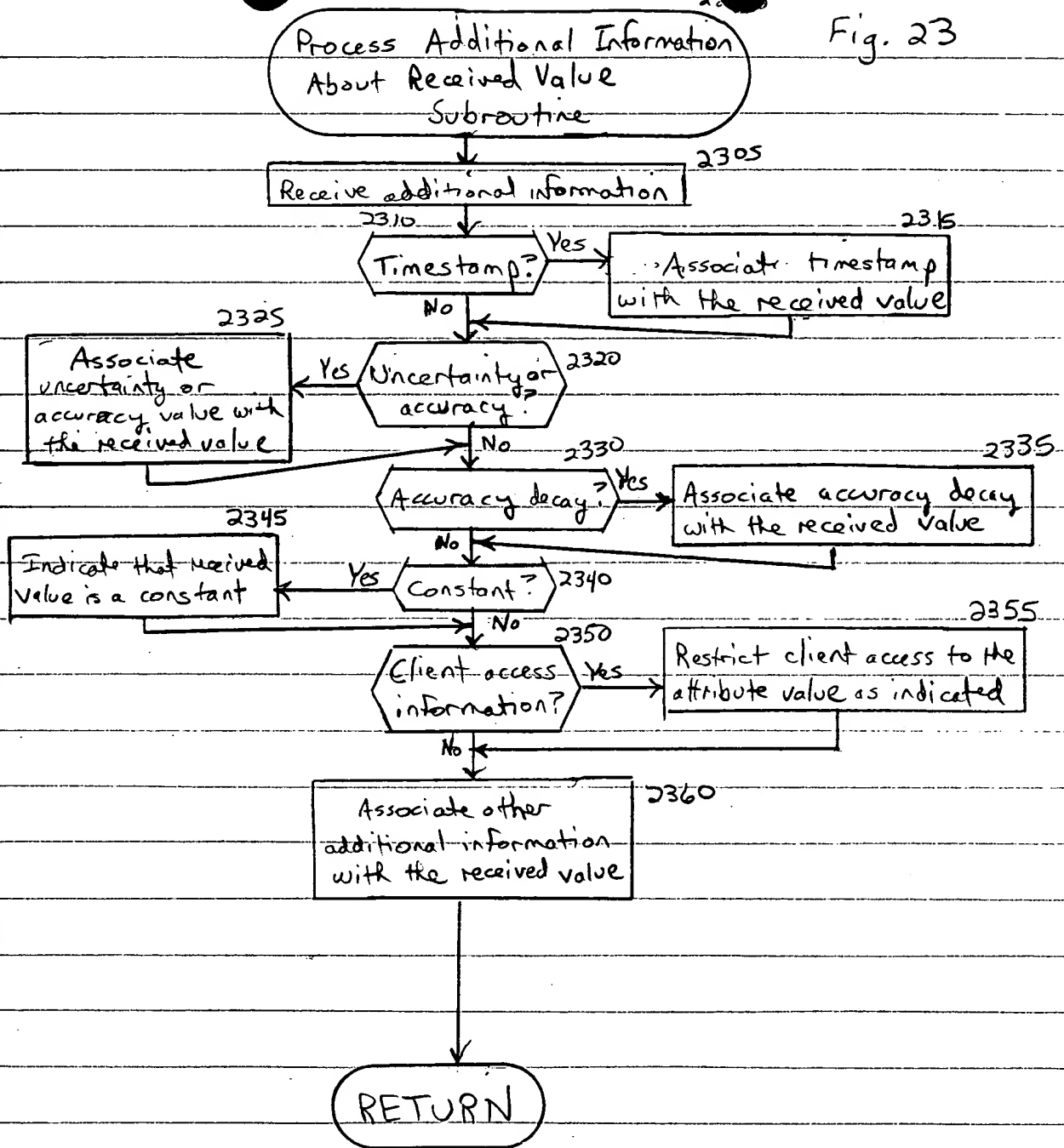
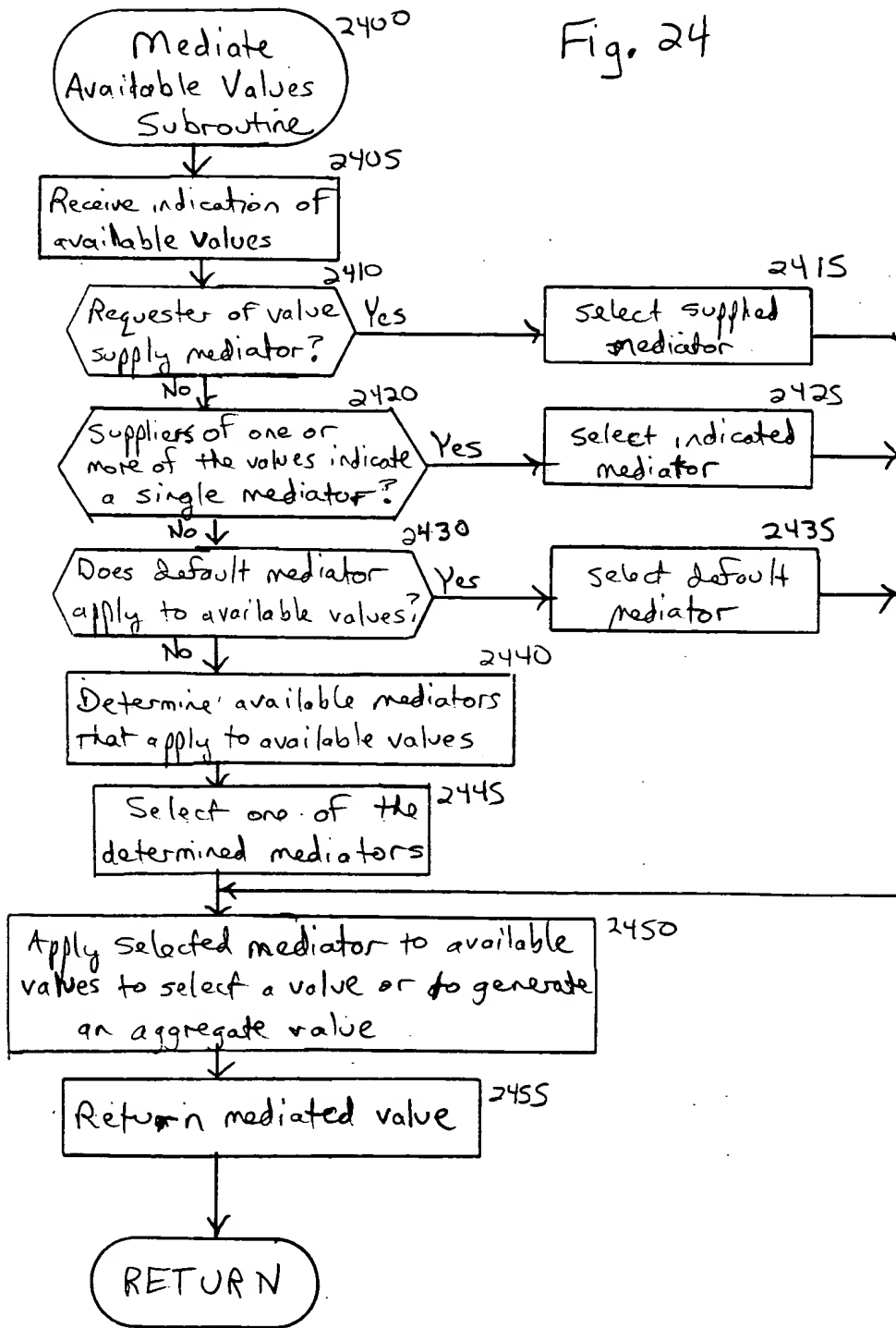
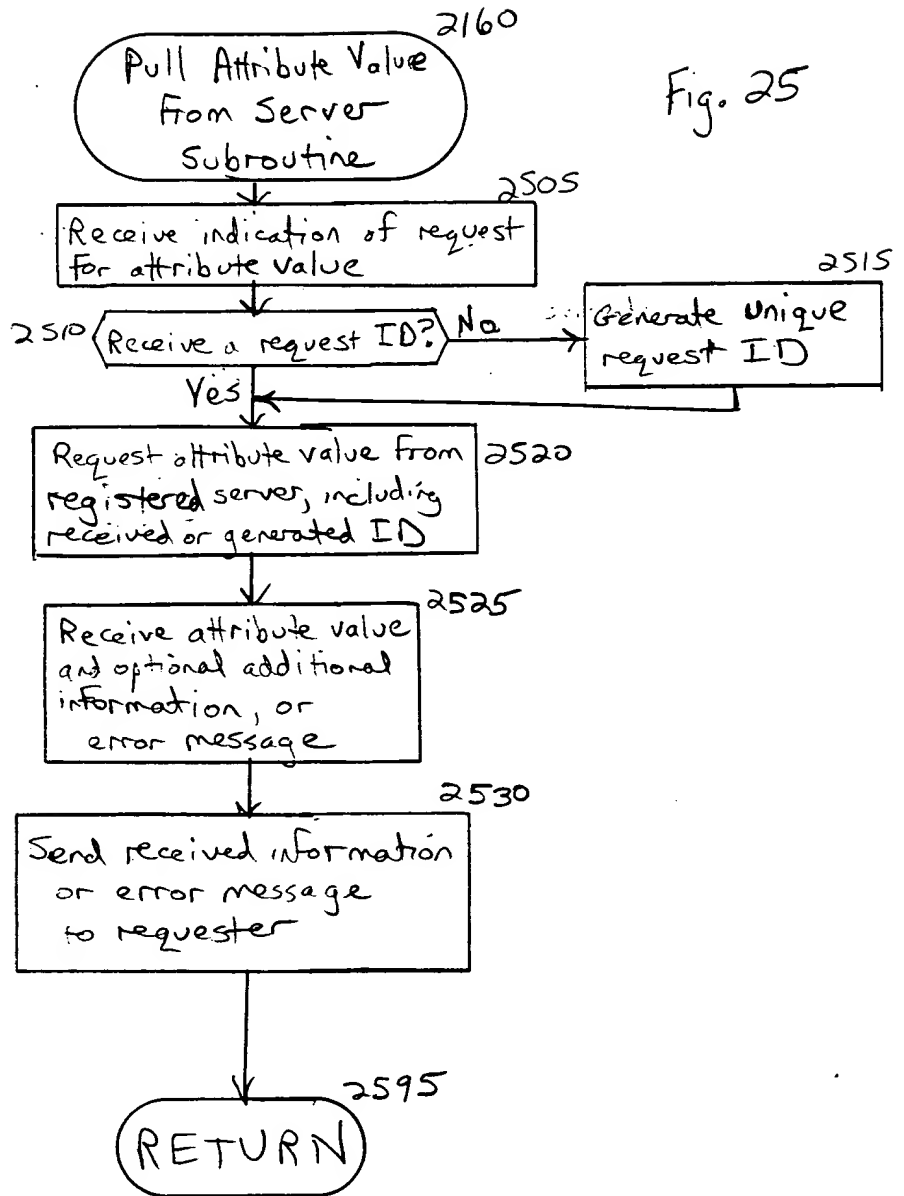
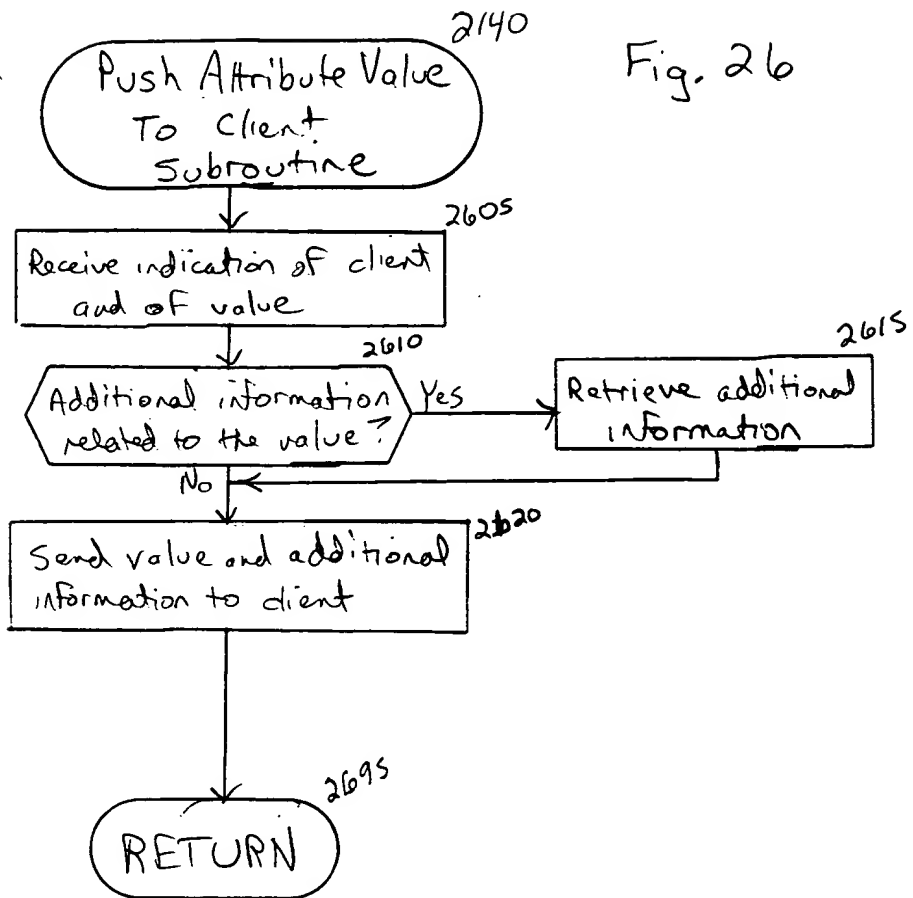


Fig. 24



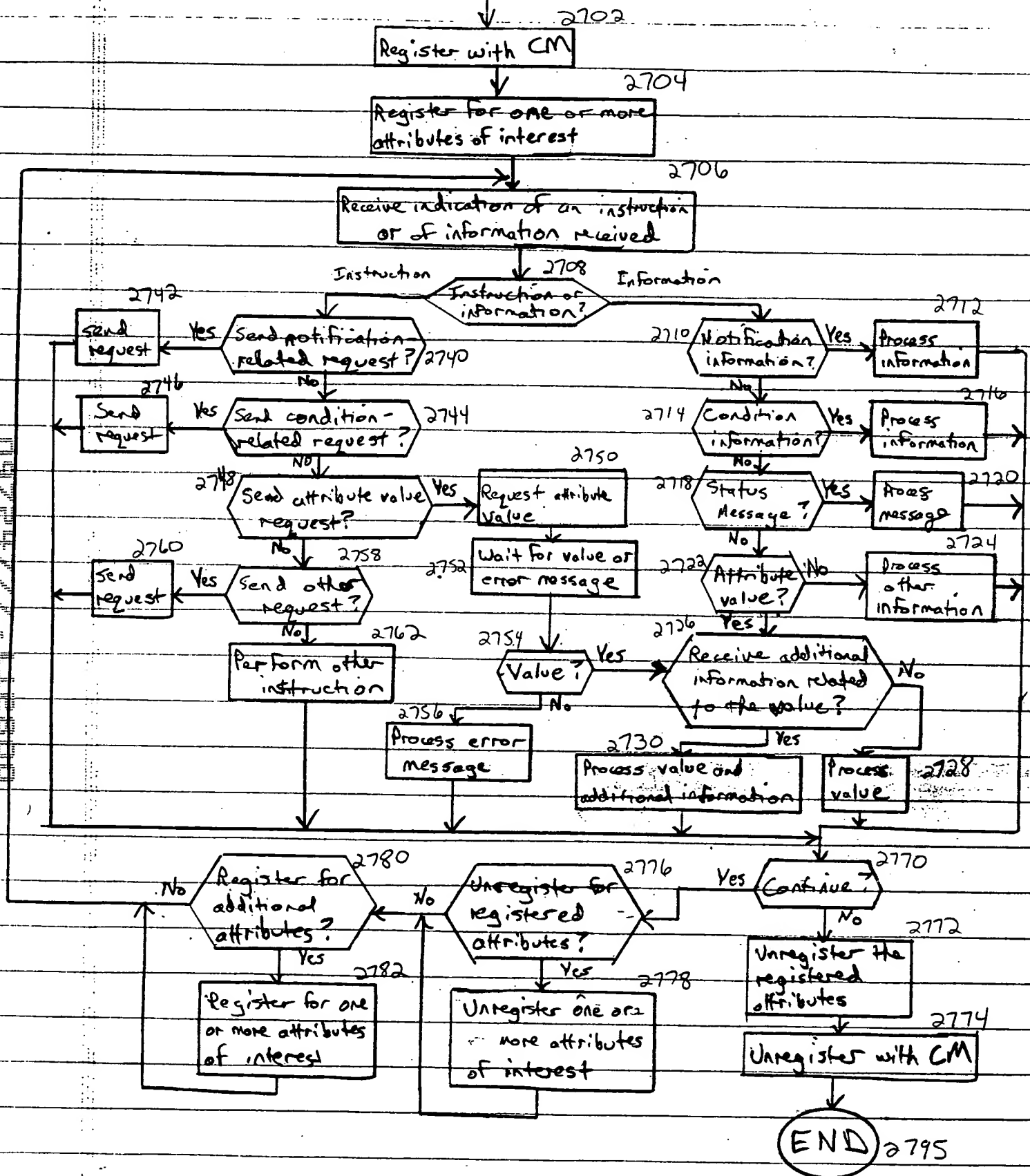
09724777 142800





Context Client Routine 2700

Fig. 27



Context Server Routine 2800

Fig. 28

Register with CM 2802

Register for one or more attributes to supply 2804

Receive indication of an instruction or of information received 2806

Instruction Information 2808

Instruction or information?

2812

Send request

2810

Send notification-related request?

2816

Send request

2814

Send condition-related request?

2820

Send request

2818

Send other request?

2822

Perform other instruction

2824

Return error

2826

Request sensor value

2828

Wait for value or error message

2830

More?

2832

Any errors?

2834

Calculate attribute value with received information

2836

Generate additional information about calculated value

2838

Send value and additional information to CM

2840

Register for additional attributes?

2842

Register for one or more attributes to supply

2844

Unregister for registered attributes?

2846

Unregister one or more attributes being supplied

2848

Unregister the registered attributes

Unregister with CM

END 2899

2852

ID match?

2854

Determine input information needed

2856

Attribute value?

2858

Store attribute & ID

2860

Request attribute value with ID

2862

Wait for value or error message

2864

More?

2866

Any errors?

2868

Sensor value?

2870

Calculate attribute value with received information

2872

Generate additional information about calculated value

2874

Send value and additional information to CM

2876

Register for additional attributes?

2878

Register for one or more attributes to supply

2880

Unregister for registered attributes?

2882

Unregister one or more attributes being supplied

Unregister the registered attributes

Unregister with CM

2830

Notification information?

2832

Process information

2834

Condition information?

2836

Process information

2838

Status Message?

2840

Process message

2842

Attribute value request and request ID?

2844

Sensor Information?

2846

Process other information

2848

Can calculate an attribute value?

2850

Store sensor information

2852

Calculate attribute value with received information

2854

Generate additional information about calculated value

2856

Send value and additional information to CM

2858

Register for additional attributes?

2860

Register for one or more attributes to supply

2862

Unregister for registered attributes?

Unregister one or more attributes being supplied

Unregister the registered attributes

Unregister with CM

2832

Process information

2834

Process information

2836

Process message

2838

Process other information

2840

Store sensor information

2842

Calculate attribute value with received information

2844

Generate additional information about calculated value

2846

Send value and additional information to CM

2848

Register for additional attributes?

2850

Register for one or more attributes to supply

2852

Unregister for registered attributes?

2854

Unregister one or more attributes being supplied

2856

Unregister the registered attributes

2858

Unregister with CM

END 2899